US009152962B2

(12) **United States Patent**
Osias

(10) **Patent No.: US 9,152,962 B2**
(45) **Date of Patent: *Oct. 6, 2015**

(54) **PROVIDING A STATUS OF A TRANSACTION WITH AN APPLICATION ON A SERVER**

(75) Inventor: **Michael J. Osias**, Budd Lake, NJ (US)

(73) Assignee: **International Business Machines Corporation**, Armonk, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1609 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **12/118,485**

(22) Filed: **May 20, 2008**

(65) **Prior Publication Data**

US 2008/0215677 A1 Sep. 4, 2008

Related U.S. Application Data

(63) Continuation of application No. 10/606,985, filed on Jun. 26, 2003, now Pat. No. 7,398,291.

(51) **Int. Cl.**

G06F 15/16	(2006.01)
G06Q 20/40	(2012.01)
H04L 29/08	(2006.01)
H04L 29/06	(2006.01)

(52) **U.S. Cl.**

CPC ***G06Q 20/40*** (2013.01); ***H04L 67/02*** (2013.01); ***H04L 67/14*** (2013.01); ***H04L 67/142*** (2013.01); ***H04L 69/28*** (2013.01)

(58) **Field of Classification Search**

CPC G06Q 20/40; H04L 69/28; H04L 67/14; H04L 67/02; H04L 67/142

USPC 709/203, 224, 231, 218; 725/16; 710/267; 705/26

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,754,772	A	5/1998	Leaf	
5,774,670	A *	6/1998	Montulli	709/227
5,963,915	A *	10/1999	Kirsch	705/26
6,098,093	A *	8/2000	Bayeh et al.	709/203
6,226,677	B1 *	5/2001	Slemmer	709/227
6,263,364	B1 *	7/2001	Najork et al.	709/217
6,385,636	B1	5/2002	Suzuki	
6,434,651	B1 *	8/2002	Gentry, Jr.	710/260

(Continued)

FOREIGN PATENT DOCUMENTS

WO	0142908	A2	6/2001

OTHER PUBLICATIONS

IEEE Xplore, Search Query, Feb. 26, 2008, 1 page.

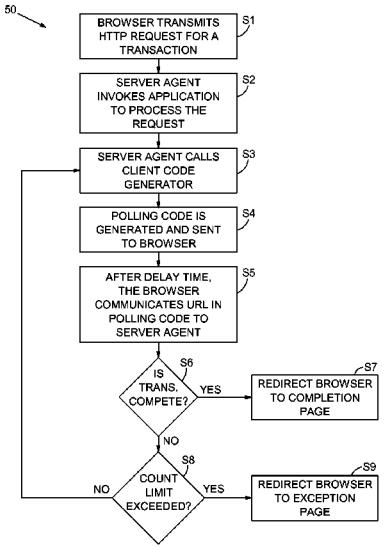
Primary Examiner — Thuong Nguyen

(74) *Attorney, Agent, or Firm* — Yee & Associates, P.C.; Lisa J. Ulrich

(57) **ABSTRACT**

Under the present invention, polling code is generated on a server and sent to a client in response to a transaction request received on the server from the client. The polling code includes a set of parameters such as a delay time and a polling count. After expiration of the delay time, the client will poll the server to request the status of the requested transaction. If the transaction is complete, the client will be redirected to a completion page. If the transaction is incomplete, and a polling count limit has not been reached, new polling code will be generated that includes the delay time and a new polling count. The new polling count is generated by incrementing the old polling count by one. The polling cycle is repeated until the transaction is complete, or the polling count limit is reached.

25 Claims, 2 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

6,470,378	B1 *	10/2002	Tracton et al.	709/203
6,769,019	B2	7/2004	Ferguson	
6,996,119	B2 *	2/2006	Koo	370/449
7,398,291	B2 *	7/2008	Osias	709/203
7,673,045	B1 *	3/2010	Battle et al.	709/225
7,792,948	B2 *	9/2010	Zhao et al.	709/224
2001/0054012	A1 *	12/2001	Nayyar	705/26
2002/0046262	A1 *	4/2002	Heilig et al.	709/219
2002/0062369	A1 *	5/2002	von Klopp et al.	709/224
2002/0065911	A1	5/2002	von Klopp et al.	
2002/0123972	A1 *	9/2002	Hodgson et al.	705/72
2003/0110161	A1 *	6/2003	Schneider	707/3
2004/0107267	A1 *	6/2004	Donker et al.	709/218
2006/0123012	A1 *	6/2006	Barth	707/10
2009/0077173	A1 *	3/2009	Lowery et al.	709/203

* cited by examiner

FIG. 1

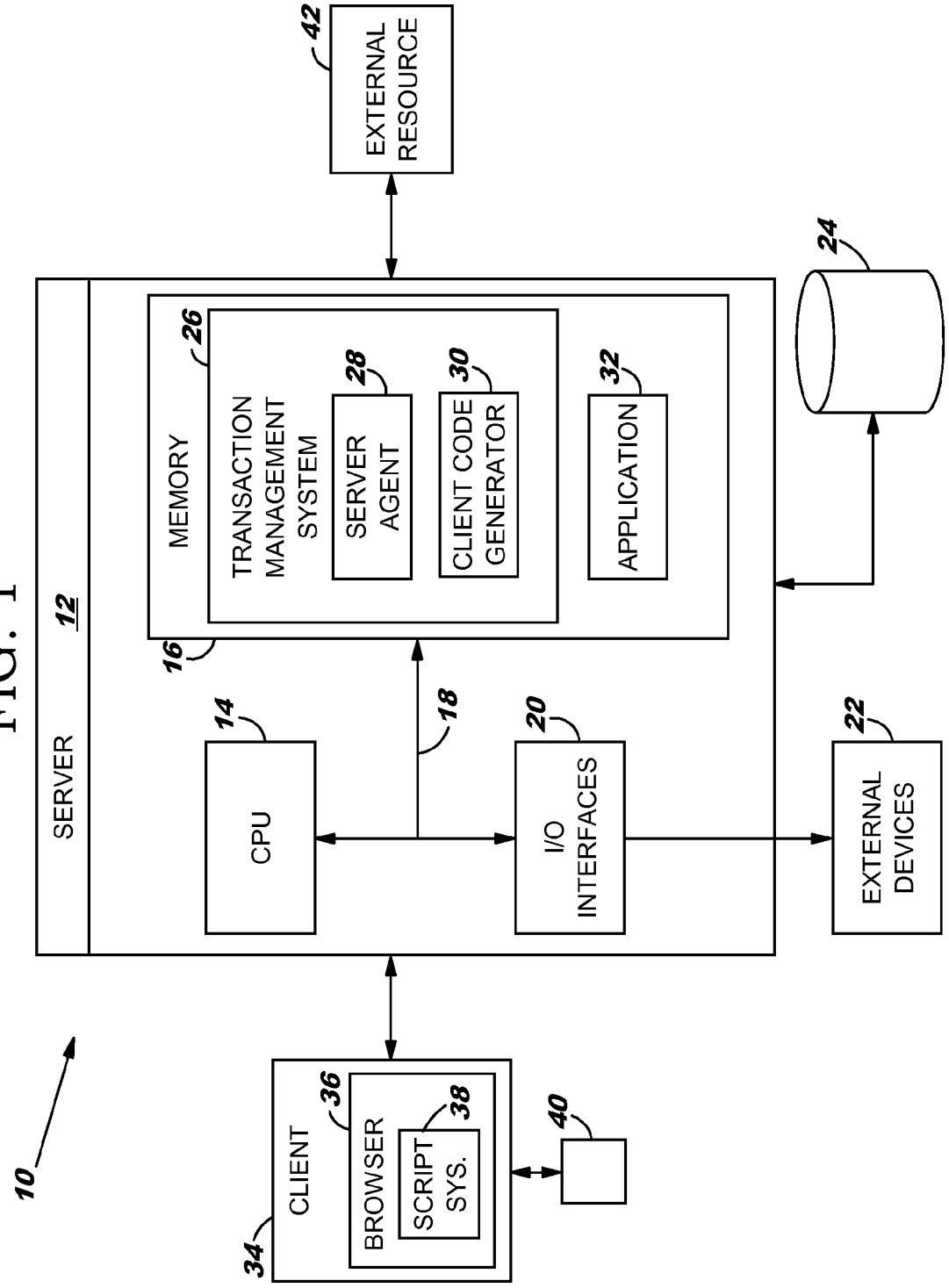
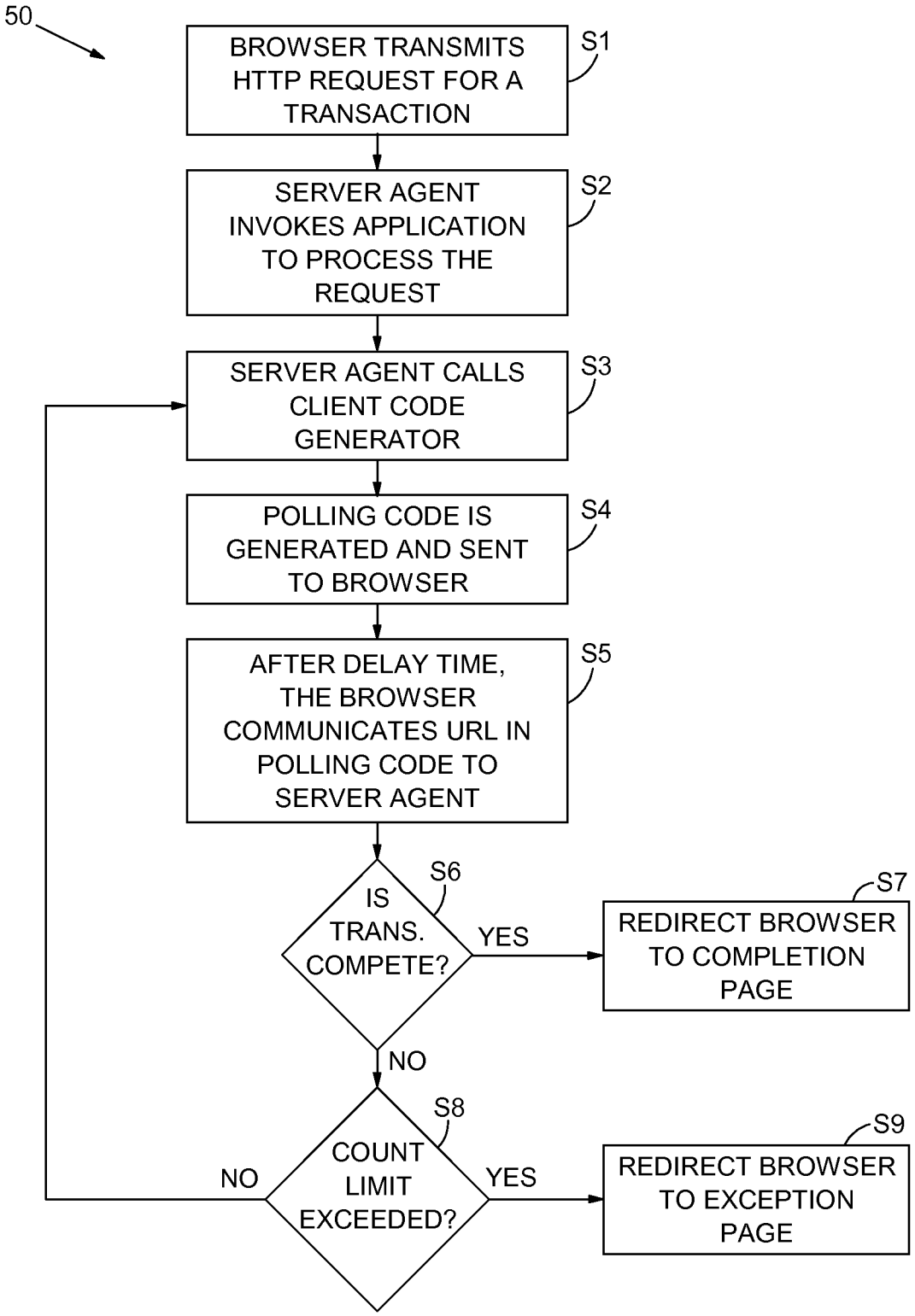

42
EXTERNAL RESOURCE
24
SERVER
12
MEMORY
26
TRANSACTION MANAGEMENT SYSTEM
28
SERVER AGENT
30
CLIENT CODE GENERATOR
32
APPLICATION
16
18
14
CPU
20
I/O INTERFACES
22
EXTERNAL DEVICES
10
CLIENT
34
36
BROWSER
38
SCRIPT SYS.
40

FIG. 2


50
BROWSER TRANSMITS HTTP REQUEST FOR A TRANSACTION
S1
SERVER AGENT INVOKES APPLICATION TO PROCESS THE REQUEST
S2
SERVER AGENT CALLS CLIENT CODE GENERATOR
S3
POLLING CODE IS GENERATED AND SENT TO BROWSER
S4
AFTER DELAY TIME, THE BROWSER COMMUNICATES URL IN POLLING CODE TO SERVER AGENT
S5
IS TRANS. COMPETE?
S6
YES
REDIRECT BROWSER TO COMPLETION PAGE
S7
NO
COUNT LIMIT EXCEEDED?
S8
NO
YES
REDIRECT BROWSER TO EXCEPTION PAGE
S9

PROVIDING A STATUS OF A TRANSACTION WITH AN APPLICATION ON A SERVER

This continuation application claims priority to co-pending U.S. patent application Ser. No. 10/606,985 entitled METHOD, SYSTEM AND PROGRAM PRODUCT FOR PROVIDING A STATUS OF A TRANSACTION WITH AN APPLICATION ON A SERVER, filed on May 9, 2008, the contents of which are hereby incorporated by reference in their entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

In general, the present invention provides a method, system and program product for providing a status of a transaction with an application on a server. Specifically, the present invention allows a server to be polled from a client to detect the status of a transaction independent of a persistent network connection.

2. Related Art

As computer technology becomes more advanced, computer users are increasingly being provided with the capability to conduct business and/or personal transactions from their home or office computers. For example, today a computer user can purchase goods/services, pay bills and manage a business over a computer network such as the Internet. In general, a network-based transaction occurs in a client-server environment with the computer system operated by the user being the client, and the computer system with which the client communicates being the server. To conduct a transaction, the client will typically establish a connection with the server and then transmit a request (e.g., a HTTP request) thereto. Upon receipt, the server will invoke one or more applications to process the request.

Unfortunately, as is well known, network connections between a client and a server often suffer various interruptions. Such interruptions can be due to, for example, a high volume of network traffic being received by the server, service provider errors, etc. In any event, the interruption of the connection often leads to loss of data, which can undermine the transaction being requested by the client. This is especially the case where the transaction takes an appreciable amount of time to process. For example, if a computer user is attempting to purchase goods on-line, the transaction could involve verifying credit card information. Verifying credit card information can require an application on the server to interact with one or more "external resources" (e.g., a bank). As such, verification of credit card information can often take several minutes.

While the transaction is being processed, status information is often desired by the computer user (especially for more time consuming transactions such as credit card verification). Specifically, the computer user often wishes to know whether the transaction is still pending, has been completed or has timed out. Previous systems for communicating transaction information to the computer users, however, all relied upon a persistent connection between the client and the server. Under such systems, as the connections were interrupted, the status information was lost or delayed. Since the persistence of a connection between a server and client is extremely difficult if not impossible to ensure, the previous systems failed to provide a reliable way of obtaining transaction status information.

In view of the foregoing, there exists a need for a method, system and program product for providing a status of a transaction with an application on a server. Specifically, a need exists for a system that allows a server to be polled from a client to detect the status of a transaction on a server. To this extent, a need exists for a system that allows a "stateful" relationship between a client and server to be maintained independent of a persistent network connection. A further need exists for a system that provides a flexible/defineable polling cycle and algorithm that is based on standard Internet technology components, and that is concealed from an end user.

SUMMARY OF THE INVENTION

In general, the present invention provides a method, system and program product for providing a status of a transaction with an application on a server. Specifically, under the present invention, a request for a transaction is communicated to the server from a client (e.g., from a browser on the client). A server agent on the server will initiate the transaction by invoking an application to process the request. Thereafter, the server agent will call a client code generator, which will generate polling code. Typically, the polling code includes a Uniform Resource Locator (URL) that includes a set of parameters and identifies the transaction requested. The set of parameters generally includes a polling count and a delay time. The polling code is communicated to the client, which after the delay time, will poll the server for a status of the transaction by communicating the URL to the server agent. Upon receipt, the server agent will use the information in the URL to determine the status of the transaction. If the transaction is complete, the client code generator will redirect the client to a completion (web) page. If the transaction is not complete, and the polling count identified in the URL equals a polling count limit, the client is redirected to an exception (web) page. However, if the transaction is not complete and the polling count limit has not been reached, the client code generator will generate a new polling code and the cycle will be repeated until the limit is reached or the transaction is complete.

A first aspect of the present invention provides a method for providing a status of a transaction with an application on a server, comprising: receiving a request for a transaction on the server from a client; invoking the application on the server to process the request; generating a first polling code having a first Uniform Resource Locator (URL) that includes a first set of parameters, and sending the first polling code to the client; and communicating the first URL from the client to the server to request the status of the transaction.

A second aspect of the present invention provides a method for providing a status of a transaction with an application on a server, comprising: receiving a HTTP request for a transaction on the server from a browser on a client; invoking the application on the server to process the HTTP request; calling a client code generator on the server to generate a first polling code having a first Uniform Resource Locator (URL) that includes a first set of parameters, wherein the first set of parameters comprises a delay time and a polling count; sending the first polling code to the browser; and communicating the first URL in the first polling code from the browser to a server agent on the server after expiration of the delay time to request the status of the transaction.

A third aspect of the present invention provides a system for providing a status of a transaction with an application on a server, comprising: a server agent for receiving a request for the transaction from a client, and for initiating the transaction based on the request; a client code generator invoked by the server agent for generating a first polling code having a first Uniform Resource Locator (URL) that includes a first set of

parameters, and for sending the first polling code to the client, wherein the client communicates the first URL to the server agent to request the status of the transaction.

A fourth aspect of the present invention provides a program product stored on a recordable medium for providing a status of a transaction with an application on a server, which when executed, comprises: agent program code configured to receive a request for the transaction from a client, and to initiate the transaction based on the request; generator program code invoked by the agent program code configured to generate a first polling code having a first Uniform Resource Locator (URL) that includes a first set of parameters, and to send the first polling code to the client, wherein the client communicates the first URL to the agent program code to request the status of the transaction.

Therefore, the present invention provides a method, system and program product for providing a status of a transaction with an application on a server.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features of this invention will be more readily understood from the following detailed description of the various aspects of the invention taken in conjunction with the accompanying drawings in which:

FIG. **1** depicts a system for providing a status of a transaction with an application on a server, according to the present invention.

FIG. **2** depicts method flow diagram, according to the present invention.

The drawings are merely schematic representations, not intended to portray specific parameters of the invention. The drawings are intended to depict only typical embodiments of the invention, and therefore should not be considered as limiting the scope of the invention. In the drawings, like numbering represents like elements.

DETAILED DESCRIPTION OF THE INVENTION

As indicated above, the present invention provides a method, system and program product for providing a status of a transaction with an application on a server. Specifically, under the present invention, a request for a transaction is communicated to the server from a client (e.g., from a browser on the client). A server agent on the server will initiate the transaction by invoking an application to process the request. Thereafter, the server agent will call a client code generator, which will generate polling code. Typically, the polling code includes a Uniform Resource Locator (URL) that includes a set of parameters and identifies the transaction requested. The set of parameters generally includes a polling count and a delay time. The polling code is communicated to the client, which after the delay time, will poll the server for a status of the transaction by communicating the URL to the server agent. Upon receipt, the server agent will use the information in the URL to determine the status of the transaction. If the transaction is complete, the client code generator will redirect the client to a completion (web) page. If the transaction is not complete, and the polling count identified in the URL equals a polling count limit, the client is redirected to an exception (web) page. However, if the transaction is not complete and the polling count limit has not been reached, the client code generator will generate a new polling code and the cycle will be repeated until the limit is reached or the transaction is complete. Therefore, the present invention allows a status of a transaction to be provided without relying on a persistent network connection between the server and the client. Moreover, the present invention allows the polling to be concealed from the user.

Referring now to FIG. **1**, a system **10** for providing a status of a transaction with an application **32** on server **12** is shown. In general, client **34** will communicate with server **12** to conduct a transaction and obtain transaction status information. To this extent, client **34** is intended to represent any type of computerized system that is capable of communicating with server **12**. For example, client **34** could be a personal computer, a laptop, a workstation, a hand held device, etc. In any event, as depicted, server **12** generally comprises central processing unit (CPU) **14**, memory **16**, bus **18**, input/output (I/O) interfaces **20**, external devices/resources **22** and storage unit **24**.

CPU **14** may comprise a single processing unit, or be distributed across one or more processing units in one or more locations, e.g., on a client and server. Memory **16** may comprise any known type of data storage and/or transmission media, including magnetic media, optical media, random access memory (RAM), read-only memory (ROM), a data cache, a data object, etc. Moreover, similar to CPU **14**, memory **16** may reside at a single physical location, comprising one or more types of data storage, or be distributed across a plurality of physical systems in various forms.

I/O interfaces **20** may comprise any system for exchanging information to/from an external source. External devices/resources **22** may comprise any known type of external device, including speakers, a CRT, LCD screen, hand-held device, keyboard, mouse, voice recognition system, speech output system, printer, monitor/display, facsimile, pager, etc. Bus **18** provides a communication link between each of the components in server **12** and likewise may comprise any known type of transmission link, including electrical, optical, wireless, etc.

Storage unit **24** can be any system (e.g., a database) capable of providing storage for information such as transaction information, parameters, URLs, etc. under the present invention. As such, storage unit **24** could include one or more storage devices, such as a magnetic disk drive or an optical disk drive. In another embodiment, storage unit **24** includes data distributed across, for example, a local area network (LAN), wide area network (WAN) or a storage area network (SAN) (not shown). It should also be understood that although not shown, additional components, such as cache memory, communication systems, system software, etc., may be incorporated into server **12**. It should be understood that although not shown, client **34** will typically include computer components similar to server **12**.

Communication between server **12** and client **34** could occur via any known manner. For example, such communication could occur via a direct hardwired connection (e.g., serial port), or via an addressable connection that may utilize any combination of wireline and/or wireless transmission methods. In any event, server **12** and client **34** may be connected via the Internet, a wide area network (WAN), a local area network (LAN), a virtual private network (VPN) or other private network. Server **12** and client **34** may utilize conventional network connectivity, such as Token Ring, Ethernet, WiFi or other conventional communications standards. Where client **34** communicates with server **12** via the Internet, connectivity could be provided by conventional TCP/IP sockets-based protocol. In this instance, client **34** would utilize an Internet service provider to establish connectivity to the server.

Shown in memory **16** of server **12** is transaction management system **26** and application **32**. Transaction management

system **26** includes server agent **28** and client code generator **30**. Server agent **28** can be implemented using any known technology. For example, server agent **28** could be a servlet, and Enterprise Java Bean (EJB), etc. In any event, when user **40** wishes to interact with server **12** (e.g., to purchase goods/services online), user **40** will input information into browser **36**. Such information could include, for example, credit card information that must be verified. In this example, the credit card information will be transmitted to server **12** as a (Hypertext Transfer Protocol "HTTP") request. Upon receipt, server agent **28** will initiate the transaction (e.g., credit card verification) by invoking application **32** to process the request. For example, application **32** could be a financial processing application. In verifying the credit card information, application **32** might communicate with one or more external resources **42** (e.g., a banking infrastructure). To this extent, external resource **42** could include personnel, hardware, software, or any combination thereof. Regardless, after invoking application **32**, server agent **28** will initiate/call client code generator **30**, which will generate polling code.

In a typical embodiment, client code generator **30** generates polling code that can be run by script system **38** within browser **36**. Typically, the polling code includes a URL that includes a set of parameters and identifies the transaction that was requested (e.g., credit card verification). Typically, the set of parameters are derived from a configuration of server agent **28**. To this extent, the set of parameters can be hardcoded into server agent **28**, derived from a configuration file that is accessible to server agent **28**, etc. In any event, the configuration of server agent **28** generally includes a delay time, a polling count and a polling count limit. The delay time dictates how long the polling code is suspended in browser **36** before execution by script system **38**. The polling count indicates how many polling cycles have been processed. The polling count limit dictates the maximum number of polling cycles to be performed before the polling loop is exited and an exception is generated. Listed below is an illustrative parameter configuration of server agent **28**.

PARAMETER	VALUE	DESCRIPTION
Delay	15 Seconds	How long execution of polling code is suspended in browser
Polling Count	1	How many polling cycles have been processed
Polling Count Limit	3	How many polling cycles occur before polling loop is exited

Based on this configuration, client code generator **30** will generate polling code having the following parameters:

PARAMETER	VALUE	DESCRIPTION
Delay	15 Seconds	How long execution of polling code is suspended in browser
Polling Count	1	How many polling cycles have been processed

These parameters are included in the polling code as a URL that also identifies the transaction requested. The polling code is sent to browser **36**. Upon receipt, script system **38** will execute the polling code after expiration of the delay time (e.g., 15 seconds). Execution of the polling code will cause client **34** to poll server **12** to request the status of the transaction by communicating the URL from browser **36** to server agent **28**. Upon receipt, server agent **28** will process the URL to check the status of the transaction (e.g., by querying application **32** or a transaction monitor, etc.). If the transaction is complete, server agent **28** will call client code generator **30**, which will generate and communicate completion code to client **34**. The completion code causes browser **36** to be redirected to a completion (web) page. If, however, the transaction is not complete, server agent **28** will compare the polling count in the URL to the polling count limit in its configuration. In this example, the polling count is "1" and the polling count limit is "3." Accordingly, the limit has not been reached.

Since the polling count limit has not been reached, server agent **28** will repeat the cycle by calling client code generator **30** to generate a second polling code with the following values.

PARAMETER	VALUE	DESCRIPTION
Delay	15 Seconds	How long execution of polling code is suspended in browser
Polling Count	2	How many polling cycles have been processed

As can be seen, the delay time remained the same, but the polling count has been incremented by one. These parameters are included in the second polling code as a second URL that also identifies the transaction. Similar to the first polling code, the second polling code is sent to browser **26** on client **34**. After expiration of the delay time, script system **38** will execute the second polling code. That is, client **34** will poll server **12** to request the status of the transaction by communicating the second URL from browser **36** to server agent **28**. Upon receipt, server agent **28** will again check the status of the transaction. If the transaction is complete, server agent **28** will call client code generator **30**, which will communicate completion code to client **34** that causes browser **36** to be redirected to a completion (web) page. If the transaction is not yet complete, server agent **28** will determine whether the polling count limit of "3" has been reached. Since, the polling count in the second URL is "2" and the polling count limit is "3," the polling count limit has not been reached.

In this case, server agent **28** will once again call client code generator **30** to generate a third polling code. In generating the third polling code, client code generator **30** will increment the polling count by one. Accordingly, the following values will result:

PARAMETER	VALUE	DESCRIPTION
Delay	15 Seconds	How long execution of polling code is suspended in browser
Polling Count	3	How many polling cycles have been processed

These parameters will be included in a third URL that also identifies the transaction. Similar to the previous cycles, the third polling code including the third URL is sent to browser **36** on client **34**. After expiration of the delay time, script system **38** will execute the third polling code. That is, server **12** will be polled by communicating the third URL from browser **36** on client **34** to server agent **28**. Upon receiving the third URL, server agent **28** will once again determine the status of the transaction. If the transaction is complete, server agent **28** will call client code generator **30**, which will gener-

ate completion code that causes browser **36** to be redirected to a completion (web) page. However, if the transaction is not complete, server agent **28** will determine whether the polling count limit has been reached. Since the polling count identified in the third URL is "3" and the polling count limit is "3," the polling count limit has been reached in this example. Since the transaction is incomplete and the polling count limit has been reached, the cycle ends. Thus, server agent **28** will call client code generator **30**, which will generate exception code. The exception code is communicated to client **34** and causes browser **36** to be redirected to an exception (web) page.

Referring now to FIG. **2**, a method flow diagram **50** according to the present invention is shown. As depicted, first step S**1** in method **50** is to transmit a request for a transaction from the browser to the server. In step S**2**, the server agent will initiate the transaction by invoking an application to process the request. In step S**3**, the server agent will call the client code generator. In step S**4**, the client code generator will generate and send polling code to the browser. As indicated above, the polling code is based on a configuration of the server agent and includes the parameters of delay time and polling count. The parameters as well as transaction are identified in a URL within the polling code that is sent to the browser. In step S**5**, the browser will communicate the URL in the polling code to the server agent after expiration of the delay time. In step S**6**, the server agent will determine whether the transaction is complete. If the transaction is complete, the server agent will call the client code generator, which will generate completion code to redirect browser to a completion page in step S**7**. If the transaction was not complete, the server agent will determine whether the polling count limit has been reached in step S**8**. If it has, the client code generator will be called and will generate exception code to redirect the browser to an exception page in step S**9**. If, however, the polling count limit has not been reached, the server agent will call the client code generator to generate a new polling code so that the cycle can be repeated.

It should be understood that the present invention can be realized in hardware, software, or a combination of hardware and software. Any kind of computer/server system(s)—or other apparatus adapted for carrying out the methods described herein—is suited. A typical combination of hardware and software could be a general purpose computer system with a computer program that, when loaded and executed, carries out the respective methods described herein. Alternatively, a specific use computer, containing specialized hardware for carrying out one or more of the functional tasks of the invention, could be utilized. The present invention can also be embedded in a computer program product, which comprises all the respective features enabling the implementation of the methods described herein, and which—when loaded in a computer system—is able to carry out these methods. Computer program, software program, program, or software, in the present context mean any expression, in any language, code or notation, of a set of instructions intended to cause a system having an information processing capability to perform a particular function either directly or after either or both of the following: (a) conversion to another language, code or notation; and/or (b) reproduction in a different material form.

The foregoing description of the preferred embodiments of this invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed, and obviously, many modifications and variations are possible. Such modifications and variations that may be apparent to a person skilled in the art are intended to be included within the scope of this invention as defined by the accompanying claims. For example, although the present invention was described in the context of credit card verification, the teachings described herein can be used to provide a status of any type of transaction. Moreover, it should be understood that the values of the parameters used herein are intended to be illustrative only.

I claim:

1. A method for providing a status of a transaction with an application on a server, comprising:

receiving, by the server, a request for a transaction on the server from a client;

invoking the application on the server to process the request;

generating, by the server, a first code having a first Uniform Resource Locator (URL) that includes a first set of parameters, and sending, by the server, the first code to the client; and

receiving, by the server, the first URL from the client requesting the status of the transaction.

2. The method of claim **1**, wherein the first set of parameters comprises a delay time and a count.

3. The method of claim **2**, wherein the receiving of the first URL step comprises receiving the first URL from the client after expiration of the delay time.

4. The method of claim **2**, wherein the receiving of the first URL step further comprises receiving, by a server agent on the server, the first URL from a browser on the client after expiration of the delay time, and wherein the server agent determines the status of the transaction based on the first URL.

5. The method of claim **2**, further comprising:

generating, by the server after the receiving of the first URL step, a second code having a second URL that identifies a second set of parameters if the transaction is incomplete and the count does not equal a count limit;

sending, by the server, the second code to the client; and

receiving, by the server, the second code from the client after expiration of the delay time to process a request for the status of the transaction.

6. The method of claim **5**, wherein the generating step comprises incrementing the count of the first set of parameters by one to yield a new count.

7. The method of claim **2**, further comprising directing the client to an exception page after the receiving of the first URL step if the count equals a count limit and the transaction is incomplete.

8. The method of claim **2**, further comprising directing the client to a completion page after the receiving of the first URL step if the transaction is complete.

9. A method for providing a status of a transaction with an application on a server, comprising:

receiving, by the server, a HTTP request for a transaction on the server from a browser on a client;

invoking the application on the server to process the HTTP request;

calling, by the server, a client code generator to generate a first code having a first Uniform Resource Locator (URL) that includes a first set of parameters, wherein the first set of parameters comprises a delay time and a count;

sending, by the server, the first code to the browser; and

receiving, by the server, the first URL in the first code from the browser after expiration of the delay time to process a request for the status of the transaction.

10. The method of claim 9, wherein the first URL is processed by a server agent on the server to determine the status of the transaction.

11. The method of claim 9, further comprising directing the browser to a completion page if the transaction is complete.

12. The method of claim 9, further comprising directing the browser to an exception page if the transaction is incomplete and the count equals a count limit.

13. The method of claim 9, further comprising generating, by the server, a second code having a second Uniform Resource Locator (URL) that identifies a second set of parameters and the transaction requested if the transaction is incomplete and the count does not equal a count limit, wherein the second set of parameters comprises the delay time and a new count.

14. The method of claim 13, further comprising:

sending, by the server, the second code to the browser; and

receiving, by the server, the second URL in the second code from the browser after expiration of the delay time to request the status of the transaction.

15. A system for providing a status of a transaction with an application on a server, comprising:

server agent code stored in a memory and executable by a processing unit for receiving a request for the transaction from a client, and for initiating the transaction based on the request;

client code generator code stored in the memory and invoked by the server agent code for generating a first code having a first Uniform Resource Locator (URL) that includes a first set of parameters, and for sending the first code to the client, wherein the client communicates the first URL to the server agent code to request the status of the transaction.

16. The system of claim 15, wherein the client comprises a browser for receiving the first code, and for communicating the first URL to the server agent code.

17. The system of claim 15, wherein the first set of parameters includes a delay time and a count.

18. The system of claim 17, wherein the client communicates the first URL to the server agent code after expiration of the delay time.

19. The system of claim 17, wherein the server agent code processes the first URL to determine the status of the transaction, and invokes the client code generator code to generate a second code having a second URL that identifies a second set of parameters if the transaction is incomplete and the count does not equal a count limit.

20. The system of claim 19, wherein the second set of parameters comprises the delay time and a new count, and wherein the client code generator code increments the count of the first set of parameters by one to yield the new count.

21. A computer program product for providing a status of a transaction with an application on a server, the computer program product comprising:

a non-transitory computer readable storage media;

first program instructions to receive a request for the transaction from a client, and to initiate the transaction based on the request;

second program instructions, invoked by the first program instructions, to generate a first code having a first Uniform Resource Locator (URL) that includes a first set of parameters, and to send the first code to the client, wherein the first program instructions receive the first URL from the client to process a request for the status of the transaction; and wherein

the first and second program instructions are stored on the computer readable storage media.

22. The computer program product of claim 21, wherein the first set of parameters includes a delay time and a count.

23. The computer program product of claim 22, wherein the client comprises a browser configured to receive the first code, and to communicate the first URL to the first program instructions after expiration of the delay time.

24. The computer program product of claim 22, wherein the first program instructions are further configured to process the first URL to determine the status of the transaction, and to invoke the second program instructions to generate a second code having a second URL that identifies a second set of parameters if the transaction is incomplete and the count does not equal a count limit.

25. The computer program product of claim 24, wherein the second set of parameters comprises the delay time and a new count, and wherein the second program instructions increments the count of the first set of parameters by one to yield the new count.

* * * * *